Alternative Handling of Dynamic Chaining and Service Indirection


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From last meeting

• Service Indirection: dynamic and fast switching of service path between Service Functions

• “SRR service function” handles dynamic indirection
  • Decouples Service Consumer (SC) and Service Providers (SP)
  • Single SC may be connected to multiple SPs through this SRR SF
  • Reclassification may not be required, switches traffic flow to any SPs
    • Based on Instantaneous situation, Policy etc.
HTTP based transport

• Extension to SFC framework
  • Utilize URLs as addressing scheme
  • Create SFPs such as: 192.168.x.x -> www.foo.com -> 192.168.x.x ->
  • This "name-based" relationship that we see possibly realized through
    specific replicated instances, where in turn the routing towards those
    specific instances is realized by the SRR

• Operation in SFC architectural framework
  • Classifier function may interact with SRR to obtain an SE (Service
    Encapsulation).
    • E.g. The Classifier function may look into the network locator map and
      determine the next SF is www.foo.com.
    • This information is provided to SRR to obtain the next hop information.
    • SRR returns the SE for next hop
Details of SRR Service Function (1/2)

- NAP at the ingress, terminates on the client side Layer 3 and above protocols, such as TCP
- NAP at the egress, terminates any transport protocol on the network outgoing (server) side
- PCE, Path Computation Element
  - Select the correct next SF, realizing path policy enforcement.
  - Initial request to a specific URL on the SFP for the first time results in a Path Identifier
  - The Path identifier is utilized for any future request for a given URL-based SF
  - Delivered to the ingress NAP

Contd..
Details of SRR Service Function (2/2)

- Transport-derived SFF (tSFF1): the communication between ingress and egress NAPs as well as NAPs to PCE is realized via a transport-derived SFF.
- Three possible tSFFs
  - SDN-based: utilizes path-based forwarding, using SDN-based wildcard matching fields
  - Realized via a BIER overlay, in turn it is realized over a BIER-compliant underlay, such as MPLS.
  - Utilize a flow aggregation approach, called edge switch classification (ESC)
Protocol Considerations

• Following protocol changes are required:
  • NAP-to-NAP protocol for HTTP: HTTP based message exchange between client and server NAPs
  • NAP-PCE protocol: Used for path computation, obtaining routing information as well as provide path updates
  • Overlay transport protocol: Used for transport-level exchange over any underlay network
  • Registration protocol: Used to register FQDN service endpoints
  • Content certificate distribution protocol: Used for HTTPS support
Next steps

• Collect feedback from the WG
  • Does the use cases and protocol changes proposal look reasonable?

• We will work on this use case and a solution in the H2020 FLAME project with experiments planned for early 2018 and beyond